Undated. Chemical (NS-Undated-002)

The object of this invention is to coat various materials especially materials which are non conductors of Electricity with metals.

The invention consists in depositing a salt of the metal upon the material to be coated by immersing it in a solution of the same in any proper menstruum, and drying the same, when it is placed in a glass reservoir box closet or other proper receptacle and within which is a quantity of moist phosphide of Calcium or other phosphide of an element which gives off phosphuretted Hydrogen when moist.

The operation is as follows, If say a silk garment is to be coloured & immersed the garment in a hot solution of nitrate of silver salt allowing it to remain for about one hour. It is then taken therefrom and thoroughly dried. It is then taken to a tight closet and suspended over a large

flat dish which is covered to the depth of say 1/16 of an inch with monobasic Phosphate of Calcium. By the action of the water phosphuretted Hydrogen is eliminated and the phosphorus thus from reduces the Silver salt to the metallic state, from 3 to 10 hours is required for perfect reduction.

I am aware that it is not new to reduce a silver salt upon ~~a non-~~ metallic by phosphorus. I am also aware that Phosphorus dissolved in its solvents such as Ether & Bisulphide of Carbon have been placed in Evaporating dishes in sealed jars over which was suspended an article containing salts of a metal to be reduced. But the use of phosphorus in solution is very dangerous, unreliable and it does not penetrate within to all parts of the material and it is besides expensive ~~and~~ and exceedingly slow in its action.

I therefore claim as my invention.

reducing metals from their salts upon
any material by Exposing the same to the
fumes which arise from moist Phosphide of
Calcium or the Phosphide of any metal
and as set forth

Experiment No. 1.

Proposition. ~~Contrast the Blue line in a gravity~~ ~~battery (called modification of Daniels) so that~~ ~~the zinc shall at all times be in the zinc~~ ~~solution~~.

To prevent the diffusion of liquids - (sul cop & chl zinc) in a Daniells gravity battery.

~~It has been observed that there is one drawback to the gravity battery which is that the sulphate of Copper solution gradually raises after the battery has been in use for some time, and a large quantity of Copper is precipitated on the zinc~~

When a piece of zinc is thrown into a solution of Sulphate of Copper the Sulphuric acid and the

Sulphate of Copper leaves the Copper and attacks the zinc forming Sulphate of zinc. ~~and~~ ~~the~~ The metallic Copper is thrown down upon the zinc in a spongy state - and this will go on until the end of Copper ~~[illegible]~~ has all been decomposed.

In the gravity battery this same effect is obtained. The Sulphate of Copper raising up towards the zinc soon surrounds it and the chemical as above described takes place which is independent of the Electrical action; the deposition of the spongy Copper upon the zinc leads to local action as well as reducing the power of the battery by continually ~~allowing the~~ reducing the

difference between the two metals a large amount of sulphate of Copper ~~is~~ is decomposed adding nothing to the power of the battery, ~~and hence~~ to obviate ~~the~~ the effect of this deposition, recourse is had to raising the zinc up ~~to the~~ as far away from the sul Cop solution as possible, so that it will be immersed in the sulphate of zinc solution only this answers very well until a complete diffusion of the two liquids takes place, but has the disadvantage of increasing the internal resistance.

Dear

In experimenting upon a large number of gravity batteries arranged in innumerable forms. I noticed that in two of the numbers which were arranged upon the principle that the elements I had placed the crystals of blue vitriol below the copper element on the top of which was the saw dust & zinc element, and that the liquid below the element was very blue while the saw dust was not even colored. It occurred to me that the electric current might perform some function and thus by arranging the element and solution in a peculiar manner the diffusion of the liquids might be prevented

[4]

I ~~that~~ this I ~~put~~ placed
2 pound of blue vitial in
the bottom of a jar 6 inch's
in diameter by 9 high
a little over ~~the~~ blue vitial
I suspended ~~the~~ the Copper
Element which was a
round disk 5 inches in diameter
with an oval aperture in the
Center 1 1/2 in diameter over
this I suspended the zinc
~~The battery was the place~~
the poles of the two batteries
were then connected together
That remained in that way
for ~~several~~ months.
No diffusion of the liquids
took place the s[illegible]

[5]

Solutions assumed a very deep blue ~~colour~~ up to contact with the Copper Element above the Copper Element and in contact with it was the sul zinc solution which was a light yellow, The zinc was comparatively clear and no trace of Copper could be discovered -

I found subsequently that when the two poles ~~out~~ of the battery were disconnected for a ~~the~~ short time that the Sulphate of Copper began to raise and mix with the ~~the~~ zinc solution but it immediately went back under the Copper when the poles were connected

[6]

~~I also found that the resistance of the battery could be~~
~~I also found that the action~~

Thus proving that the Electric Current itself prevents the diffusion of the liquids

I also found that when the zinc was ~~put~~ lowered down within 1/64 of an inch of the Copper Element that the Sulphate of Copper would return back under the Copper Element after it had been allowed to rise, in much less time than when the zinc was farther ~~on~~ away from it

~~on~~ Therefore the ac[illegible] of the [illegible] [illegible] [illegible]

battery is much not [illegible]
when the two elements are
very close but the internal
resistance is greatly reduced
As the liquids in this battery
soon diffuse it is well to employ
when they are used upon
an open circuit to shunt each
cup with several feet of small
German silver wire.

~~[illegible] jar~~
~~and charged with [illegible]~~

This battery is perfectly
constant the galvanometer needle
~~stood in the same place~~
not varying a degree for
months =

Name	Resistance	Do-Moving.	Polarization.	Def on O	Def on H	P. Renouncement
Cyanide Mercury	High		O. Slowly on Zn quick – H. Quick on all.		Nothing on 20,000	
Acetate Aluminum	Low		H. Absolute Quickness on all. O. slow except all indication Zn [illegible]		Nothing on 20,000	
Sulphate Quinine	Very high		H. Just on all O. little –		Nothing on 20,000	
Carb of Lithium	Low		H. Quick on all but P very low O. Quick on all.	Slips slightly.	Nothing on 600. Very low on 20,000. Quickly on 40,000	
Coffein	Mod Low		H. Just on all especially on Silver O. little –		Nothing	
Carbozotic Acid	Mod Low		H. Instantaneous on all. O. No but quicker acid		Nothing on 20,000	
Amygdalin	High	Variable.	H. Just on all. O. Just slowly on all except Silver [illegible]		Nothing on 20,000	
Acetate Morphine	Low	Variable	H. Just on all. O. little –		Nothing	
Valerate Manganese	High.		H. Just on all. O. little –		Nothing	
Citrate Coffein	High	Variable	H – Just on all except P. Slow O. Slow on all but P. a bit come		Nothing	
Chloride of Copper	Low		H. Very just O – little		Nothing	
Tannate of Iron	Mod		H. quick on all. O – Slower on all.		Nothing on 20,000	
Hypophosphate Manganese	Low		H – Slowly on all. O – little		Nothing	Bleachings on H on silver [illegible]
Aloin	Very high	Very Least on Platinum	H. Least on P. quick on the [illegible] O. Slowly on except on Cu [illegible]		Nothing	Yellow ink on H. unpaid on O.
Valerianate Quinine	Very high	Easier	H. Just on all. O. Much slower except the Zn		Nothing	
Camphoric Acid	High	high on all but Zn plated + Zn	H. quick. O. Very slow except P. quick		Just on Platinum on [illegible] Nothing [illegible]	

Name	Resistance	Do-Moving.	Polarization.	Def on O.	Def on H.	P. Renouncement
Citric Acid.	Low	Variable + Zn. Very Quick – Variable	Quick on all but P on H. " " " " O		Can't feel on 20 000.	
Arsenate Quinine	Low		Just on all on H.P.O.		Detect it on 20 000	
Nitrate Bilirubin	Low		H. Slowly on all O. little.		Get it on 20 000	
Valerianate Ammonia	Moderate		H. Very instantaneous on all O. Same	on 600 the fluids	Fair on 20000. opposite Zn	
Valerianate Magnesia.		Variable. Least on Platinum	H. quick on all. O. little	Guaranteed.	Can't get it on 20 000	
Citrate Quinine.	Very high		Polarization Instantaneous on all except on O. little but Zn slightly		Nothing	
Valerianate Soda.	High.	Variable. Least on Platinum	H. Instantaneous on all.	Slips on O. on 600.	Enormous on 600. strong on 20 000 very [illegible] on 40,000.	
Sulphate of Soda	Low	Very low on H. Zn + Zn. Slower on Platinum	Quick on all. on O. quick except Zn. Zn. Slower on Platinum	on 600. slight slip on all	on 600 big on 20000 strong on 40 000 enormous. Quickly. Least of Zn + Pt.	
Hippuric Acid.	~~Very low~~	Variable.	Instantaneous on O. little		600 good – 20 000 quite strong 40 000 very strong. Best on Nickel weak on Platinum.	
Bromide of Sodium	Very low		Very slow Polarization Slower on H. little on O.		600 strong 20 000 Just feel	
Arsenate Soda	Mod high	Variable.	Very slow Polarization slower on Pt. O little	~~Slips~~ slips	600. on Platinum Enormous. strong on 20 000. quite strong on 40 000	
No 2 Cyanide Potash Acetate Mercury	Low.		H. Variable. Zn slow. Cu [illegible] on H. slow on all except on Cu [illegible] on Platinum	Increases slightly	strong on 20 000. little [illegible]	
Same quite dry –			H. Slow on all. Pt. very slow. all [illegible] O. – little on all.		20 000 very strong 40 000 Fairly very strong.	
~~Arsenite~~ Soda.	~~High~~ Low		H. rather slow. especially on [illegible] on Platinum on O. quick on all.		600. big 20 000 strong on 40 000 pretty good	
Iodide Quinine	Mod Low		H. Very strong. quick on all. and P. [illegible] Silver. little	Slips slightly –	600 strong 20 000 nothing	
Manganate Soda	Low		H. Just on all except P. especially [illegible] O. very slowly on all.		Nothing on 20 000	
Sulphate Cinch	Very high.		H. Quick on all. not really on Platinum O. slowly on all.		~~Just~~ Nothing	
Acetate Silver No 2	Low		H. quick on all but [illegible] on Pt. O. " " but Silver [illegible]		Get it on 20 000.	

Name	Resistance	De-Moving	Polarization	Dif on O	Dif on H.	Phenomenona
Ferrocyanide Ammonia	Low	—	Very slow except on Platina	—	Nothing on 10,000	
Chlorate Potash	Low	—	Very on all. 2 inst. P none	—	600 10 grms. Strong — nothing	
Nitrate Magnesia	Low	—	about Instantaneous	—	— Nothing —	
Iodide Potash	Low	—	Instant on all. Pt not	Increase —	Slight on Platina strong on 30,000.	
Oxalate Soda	Low	—	Inst on all. except Platina not at all	—	feel it on 10,000	
Acetate Baryta	Low	—	Quick	—	feel it on 10,000.	
Bisulphate Potash	Low	—	Variable on Dif metal	—	Nothing	Rev. of Pol. on All. on H. again on O. [illegible]
Phosphate of Soda	Low	—	Variable - more on Tin & Plat.	—	Strong on 20,000	
Citrate of Ammonia	Low	—	Variable. least on Platina.	—	Very weak 20,000	
Sulphate Magnesia	Low	—	Instantaneous	—	Increase Enormous on 600.	On increasing R. to 10,000 the [illegible]
Borate Soda	Low	—	Instantaneous almost insulated	—	on 600 deg. Pots on H on 10,000 Enormous	
Pyrogallic Acid	Low	—	Quick	—	Nothing	Black ink on H. Yellow on O. Yellow ink most sensitive [illegible]
Bichromate Potash	Low	—	Variable. Instantaneous on most all	—	strong on 10,000 feel on 40,000	
Gum Arabic	Low	—	Instantaneous on most	—	Strong on 40,000	
Gallic Acid.	high	—	Quick	—	good on 10,000 good on 40,000	
Licorice	Low	—	Quick on all. pure on Platina Platinum	Slight on O on 600.	[illegible] weak on 10,000. Enormous on 600	
Tomato Copper	Low	—	Moderate	—	absolutely nothing	

Name	Resistance	De-Moving	Polarization	Dif on O	Dif on H	Phenomenon
Acetate Aq. Faustick	Very low	—	H. Variable on all. rapid except Platina O. Instantaneous on all. including Platina	— Just	feel.	
" " "	Very low	—	H. do ..... slight high on P. O. ditto —	—	Very strong on 50,000.	
Bicarbonate Soda	Low	—	Variable. on O. H. more O on Platina	—	Strong on 50,000.	
Bromide Potassium	Low	—	Same as [illegible] on H. on Silver strong on 600. on Gold [illegible] None on H. or O.	—	good for 10,000.	
Nitrate Potash	Low	—		—	slight on 20,000.	
Bermuda Arrowroot	Low	—	Variable - Just on most on H. O. Variable - more on Platina	—	good for 20,000.	
Bromide Cadmium	Low	High on Aluminum	Instantaneous on O. not H	—	None	6 pic ink on H
Chlorate Potassium	Low	—	None —	Fair on 600. doubtfully if increase.	600 strong on H. 2,000 fair get it on 40,000 X	"Matter here"
Potassic Hydrate	Low	—	Pol. inactive on all but Pt. on H. & then on Nickel. Inactive on all but Platina on O.	—	Strong on 40,000	
Sulphate Zinc	Low	—	H. Just on all. O ditto.	—	Nothing	
Common Alum	Low	—	Slow on P. inactively on other O ditto.	—	None on 20,000.	
Chromic Acid	Low	—	Just on all. except Brass. Iron. Iron on Iron.	—	None on 20,000	
Tartaric Soda	Low	—	None on Platina. inactively on other. Very Very Very Very almost insensitive. Low O. just on all.	—	Strong on 600, get it on 20,000.	
Tannic Acid	Enormous Thousands	Resistance increased 20,000 Ohms. Resistance of Alum.	Instantaneous on O. not H	—	quite plain on 20,000	
Ferrocyanide of Potass.	Very low	—	Variable. least on Platina. O. instantly on all.	—	Nothing	
Hyposulphite Soda	Low	—	Quick on all. but Platina. Very slow on Platina. Pol. slowly on all on O.	—	get it on 20,000.	
Carbonate Magnesia	Mod. High	Platinum. Aluminum insensitive	H. Quick on all O. ditto —	—	Very strong on 20,000. Sensitive. [illegible] 20,000	
Nitrate Ammonia.	Low	—	H. Quick on all O. ditto —	—	Nothing	

Monochloride of Iodine	Resistance	Moving R.	Polarization	Diff on O.	Dif H.	
Nitrate Lead	Resistance Low	[redacted]	Low	Nothing	Nothing	Pap adhers to plat on O.
Grapefruit oil	—	Vanishes	Very Rapid	no [redacted]	Nothing	diff in H at the H plat Emmons
Acetic Acid	Resistance High	—	Instantaneous	no [redacted]	Nothing	Marks on H with silver
Mercurous Sul.	Low	—	Medium Plat At Affects	Nothing	Medium 10000	
Perchlorate Potash	Low	—	Quick	Nothing	Medium	
Iodo phosphate Potash	High	—	Quick —	Nothing	Nothing	
Phosphate Manganese	Low	—	Quick	Nothing	Medium 10000 sharp	
Sulphate Strychnine	Low	—	Moderate	Nothing	Nothing on 10000	
Phosphate Zinc	Mod high	—	Quick	Nothing	Nothing	
Hyposulphate Barium	Low	—	Very slow at P.	Nothing	Increases	
Iodide Zinc	Very Low	—	Very slow	Nothing	Nothing	Blk mk on H. Iodine mk on O.
Iodide of Quinine	Very high	—	Medium	Nothing	Nothing	
Sulphate Strychnine	Very high	—	Very Quick	Nothing	Nothing	
Chl of Propylamine	Low	—	Quick	Nothing	Nothing on 10000	
Saponin	Very high	—	Mod Slow	Nothing	Just fad 10000	
Nitrate Strychnine	High	—	Quick	Nothing	Nothing on 10000	
Lime Carbide	Low	—	Instantaneous	Nothing	Nothing 10000	Blk mk on H. superior
Chinic acid	Low	—	Quick	Nothing	fad on 10000	Red mk on O. with P. on 10000
Sulph Cinchonidi	High	—	Very Quick	Nothing	Nothing	

Name	Resistance	Do-Moving	Polarization	Diff on O.	Dif on H.	Phenomenona
Sulphate Strychnine	Low	Even	H. Just O. Extra Slow	—	Just on 20000	
Hydro-Bromate Ammonia	Very Low	Even	H. Just O. Extra Slow	—	600 strong 20000 Nothing	Gases Bromine Iodine on O. Evolution Ammonia gases small bu
Manganese Potash	Low	Least on Zn Tin + Plat	H. Just mod. kept P. soon in O. Just on Alt. slow on Zn	—	Nothing	
Stannate Soda	Low	Very rapid — high on all but Pt. Pt. responsible slow Zinc Tin Emmons	H. Just mod. kept P very slow O. Better off on all	—	600 strong slow very strong Just fad 10000 Nothing on 40000	
Creosote	Very high	Even	H. Just mod. kept P. Slow O. Very slow	—	Nothing on 20000	
Sulphocarbolate Soda	Low	Alt. high Zn high Alt + P Low on	H. Very deep of Ammonia Yellow O. Very slow	—	Very strong on 20000 Quantity on 40000 Just fad P. only just affects	P. polys on + with. Iodine mark a moment after opening stopper and on O. Ammonia phosphate on yellow
Acetate Iron	Mod high	Lowest on Zn	H. Just O. Just	—	Increases with on 20000	
Picate Ammonia	Mod high	low on P. highest on Aluminum	H. Quick O. Quick	—	Nothing	Yellow ppt. when touch on Zn or Al kept silver — that black
Sulphate Alumina	Mod high	Nearly Even	H. Just O. Specially fast	—	Just on 20000	
Permanganate Potash	Low	Specially low on Platinum	H. Just at first P. that + Pt O. Quick on all	Stops	Strong only on all but Pt. on 40000	
Sulphate Ammonia	Very high	Apparently Even	H. Just at all kept P. slow O. Mod off on all	—	Nothing on 20000	
Sulphate Quinine	Very high	Plat Low All high	H. Quick on all to Zn + Platinum O. Quick on all but Plat. slow	—	Nothing on 20000	
Sulphate Magnesia	Mod Low	Lowest on Platinum	H. Quick O. Just quick	—	Nothing on 20000	
Lupulin	High	All high Zn Very low	H. Off on all kept Silver Mod off O. Not so quick	—	Very faint on 20000 nothing on 40000	
Valerianate Zinc	Low	Zn high	H. Quick on all O. Mean slow — Zn Just Pt	Stops —	600 big 20000 Nothing	
Chloride Lithium	Low	Apparently Even	H. Quick off on Al + Zn O. Extra Fast — P. app. Mean O. Apparently Even on many	—	600 quick Quantity Quantity Quantity	Notice that nothing pops time after off. Just after opening and pops quantity more and at moment opening more and quantity more and
Tannate Quinine	High	Even	H. Quick O. Slower Silver Non	—	600 not kept on Silver Quick	big deal of H of pop when on Silver on O. Very strong.

Name	Resistant	do. moving	Polarization	Def. O.	Def H	Remark
Chl Uranium	Low	—	Very Quick	~~Quick~~	Feel thresh 10.000.	
Iodic Acid	Low	—	Quick	—	Nothing thresh 10.000	faint mk on H. blue.
Permitate Iron	Low	—	Instantaneous	—	Nothing	
Iodide Ammonia	Very Low	—	Quick.	—	Thresh 9 Decimal 9 dec 10.000	Iodide mk on O.
Valerianat Potash	Low	—	Quick.	—	feel it on 10.000	faint blue mk on O.
Nitrat of Uranium	Low	—	Very Quick at m. H.	—	nothing on 10.000	Slight yello mk on H
Uric acid	Low	—	Quick	—	Nothing	
Papain	Very Low	—	Very Slow	—	weak but strong on 10.000.	
Iron Sesqui Pot	Very Low	—	Exceptionally Slow	—	Nothing	Blue mk on O. Nothing thresh to 5000
Phosphat Potash	Very Low	—	Exceptionally Slow	—	10 good with Phenol. Very strong —	
Iodide Potash	Low	—	Bapanch on Platin. Extremely slow	—	Strong on 10.000. Good on metal that poly quick	
Iodide Soda	Very Low	—	Quick on all but Tin & Platin. a apparently never mg	—	Nothing	
Chl Nickel	Low	—	Instantaneous	—	just get it 10.000.	
Bicarbonate Potash	Low	—	Quick	—	Nothing	
Sulphat Calcium	Low	—	Very Slow probably on Tin & Platin	—	weak on Phot. Strong on Nickel & Zinc	Pos of ppt. very great on Calcium
Formiat Soda	Low	—	Platin. Nowr is diff on all other	—	Nothing	
Lactate of Zinc	Low	—	Quick	—		

Name	Resistance	Do-Moving	Polarization	Def. on O.	Def on H.	Phenomenona
Borate of Barytes	high	Even	H. qk on all but Pt & Au. Au. slow O. quick.	—	Get in 600.	
Precotonin	Med low	Variable.	H. quick on all. O	—	Nothing	
Carmine	high	—	H. Instantaneous O. Slower	—	Nothing	Bleach Color on O.
Protocyanide Copper	Low	P. low Al high	H. Just on all O. all but.	—	Nothing	
Nitroprusside of Soda	Low	P. low Tin mod. Al high	H. Just except P. extremely slow O. Nitroprusside so rapid.	Increases	Scarcely noticeable on 800.	
Iodide of Iron	High	Even	H. qk except P. extremely slow O. Pretty slow on Alf.	—	Good. Nothing	
Sulphate Cerium	high	Even	H. Just especially on Platin O. Just.	Increases enormously when just tried	Nothing	Nonequal fractions of ppt exceedingly small.
Acetate Chromic	Low	Alf. high P low	H. quite slow. O. Little faster.	600 Steps strongly	But little more. Nothing on 20,000	
Iodide Calcium	Low	Even:	H. qk except just Au. & Tin O. apparently never just only Tin	—	Nothing on 20000	
Cyanide Silver	high	P low Al high	H. Just O. Just.	[illegible]	600 very strong on Au. Tin & P. Nothing on Alf weak on Au & strong on O. Nothing on 20000.	
Sulphuret Barium	high	Zn & P low Aluminum high	H quick O slow, —	decreases by passing just no ppt. Great increase in Alf & none ppt in others	—	

	600	10 000 ~~20000~~	20 000	30000.	40 000	50 000
Chl Ammoni		feel				
Iodide Ammonia		get it				
Valerianate Potash		feel it				
Pepsin		weak but strong				
Phosphate Potash		good with pepsin				
Iungstate Soda		good. but not so strong as 600				
Microcosmic salt		medium				
Phosphate Ammonia		medium strong				
Saponin		just feel				
Chlorine water		just felt				
Citric Potash	Strong			strong		
Iodide Potash	strong.	strong	strong			
Phosphate Soda		strong			feel	
Bichromate Potash			Ok.		strong	
Gum Acacia	Enormous		very strong		get it	
Licorice	Enormous		very strong		nearly as strong as 20	
Carbolic Acid					get the stress	
Camphoric acid					~~very strong~~	very strong
Acetate Hydrochlor Potash						strong
Bi Carb Soda		good.				
Bromide Potassium			slightly good.			
Iodide Potash					strong	
Benzoic Acid						
Citric Potash			get it			
Hyposulphite Soda			very strong		quite strong	
Carb magnesia						

	600	10 000	20 000	30 000	40 000	50 000
Sulphate Bridge			get it			
Bicarbonate Ammonia	~~600~~ strong					
Stannate Soda	Tremendous				Very strong	
Sulphocarbolate Soda			Very strong		quite strong	
Sulphite Ammonia			get it			
Permanganate Potash					quite strong on Ab	
Lupulin			faint			
Valerianate Zinc	Big					
Arsenate Ammonia			detect it			
Iodide Quinine			get it			
Iodide Ammonia			faint		actually faint	
Valerianate Soda	Enormous		strong		strong	
Sulphate Soda	big		strong		enormous not so strong	
Hypophosphorus acid	good.		quite strong		Nearly as strong but not quite so strong as 30	
Bromide Sodium	strong				get it plain	
Arsenate of Soda	Enormous		strong		quite strong	
No 7. Acetate Hydrochlor K.			strong		strong	
Same quite dry			Very strong		Exceedingly strong	
Arsenate of Soda	big		strong		pretty good	
Iodide Ammonia	strong					
Acetate Alum			get it			
Borate Baryta	get it					
Metaphosphoric soda	Scarcely feel it					
Sulphate Silver	Very strong on Zn Tin J.P.					

Chloride	Sulphate	Iodide	Carbonate	Nitrate	Acetate	Valerianate	phosphate	Tartrate	Citrate
I	III	II	III	II	II	IIII	III	I	I

Bicarbonate	Acetate	Bromide	Phytate	Hyposulphite	Aluminate	Hydrofluorate	Sulphocarbolate
I	III	I	II	III	I	II	I

Weak on 40.000.

- Sulphate Potash
- Bichromate Potash
- Gallate Ammonia
- Citric Acid
- Citrate Magnesia
- Iodide of Ammonia
- Hypophosphite Soda
- Citrate Potash
- Hypophosphite Ammonia
- Benzoate Soda
- Citrate Magnesia

Potash 4

Soda 3

Magnesia 1

Pretty strong on 40000.

- Sulphate Caffeine
- Gum Arabic
- Carb Lithia
- Carb Potash
- Carb Lime
- Carb Magnesia
- Sulpho-Carbolate Soda
- Permanganate Potash
- Valerianate Soda
- Boracic acid

Very strong. on 40 to 40000.

- Acetate Hy & Cam Potash
- Bi Carbonate Soda
- Thiosulphate Sodium

Exceedingly strong. on 40 000.

- Acetate Hy & Cam Potash dry powder

Lithia 1

Ammonia 1

Calcium 3

Phenomenal 3.

Solution	600 Ohms	20,000 Ohms	40,000 Ohms	Phenomenon
Sulphate Sanidin	Good	Nothing -		Quite sensitive Helps Hand on 20,000 Ohms
Prot. Chloride of Iron	Strong Inc.	Very Strong Inc	Not Increase -	Slips On O.
Iodide Barium	Increase -	Get something		This Thing is very sensitive. Fine Iodine work on O. Blood sensitive
Oxalic Acid	Much Increase	—	No. Weaker -	Inc. Fric on O. Enormously at 600. Very Strong, Also 40,000
Manganite	Weak -	Get it -		
Phosph. Diphenic Acid	Ex Strong.	Fair on J.T.C.		Normal Fric. Constant at moment of opening
Bromide Mercury	Ex Strong	Barely Get it		
Anthracite Potash	Enormous	Reversed action and Inc Friction Very Strong	Still more marked.	
Phosphate Magnesia	Quite Strong	—	Feel it	Paper Quite Hot
Chlorate Magnesia	Strong	Scarcely -		Inc Fric on O.
Tantalic Acid	Weak	Barely any		
Arsenious Acid	Very Little	Just Feel it		
Oxalate Ammonia	Weak	Get it.	Nearly as Strong	
Gum Destrine	Qt Strong	Fair.	Fair -	
Sulphanate Calcium	Strong.	Fair	Get it -	Slips on O.
Gum Guiac (Quite Fresh)	Vy. Great	Qt Strong	Equally Strong	
Gum Gamboge Quite Old	Enormous	Vy. Strong.	St. Strong	As good as acetate of mercury.
Gum Guiac	Enormous	Strong	Very Fair	Work on Fring
Gum Gamboge Quite Fresh	Very Great	Very Strong	Strong —	Enormous Inc Friction

Solution	600	10,000	20,000	40,000	Phenomenon.
Sulphate Nitrate Soda			Fair		
Acetate of Nickel	Inc. Fric Enormous		Not good.		Slip Slightly on O.
Sulphate of Potassium	Strong		Fair		
Iodide	Very Strong		Just Get it		
Chloride Aluminum	Very Strong		Not Fair		
Cuprite Barytes -	Quite Strong		Nothing		Slip Slightly on O
Sulphate Lithium	Great		Slight		
Acetate Phosphate Cadmium	Good		Just Feel it	Still Feel it	Inc. Fric on O.
Sulphate Cobalt	Ex Great		Strong	Strong	Inc. Fric. on O.
Cy. of Potassium	Good		Slight		Slight Slip on O
Bi. Sulphite Soda	Enormous		Nothing		
Chloride Cadmium	Strong		Nothing		Inc. Fric on O.
Boracic Acid -	Strong		Strong	Most as Strong	
Sulphate Morphine	Strong		Fair		
Acetate of Lead	Qt Strong		Nothing		This Paper Passes From High to Low Resistance Quite Current is passing finally becomes good Conductor
Caffeine	Strong		Just Feel it		
Acetate Ammonia	Weak		Nothing		Poly. clear & sharp. Normal Fric Paper. Smooth
Acetate Strontia	Weak		Nothing		
Chloride Strontia	Very Strong		Nothing		Slight Slip on O.

Solution	600	10.000	20.000	40.000	Phenomenon-
Chloride Magnesia	Barely any		Nothing		Slips Slightly on O.
Phosphate of Sodium	Very Great		Very Strong	Very Strong	Slips quite Strong on O
Nitrate of Lime	Strong		Nothing		Slips Slightly on O
Sulphate	Weak		Slight on Pol. only		Inc Friction on O.
Benzoate Soda.	Very Great		Quite Strong	Very Fair	Inc. Friction on O.
Bi Chloride Mercury	Great		Quite Strong	Gt it on Nickel	
Salicine	Great		Quite Strong	Quite Strong on Lime only	
Pyro Phosphate Soda	Ex Strong		Sand-	Rather Weak	
Phosphate Calcium	Moderate		Nothing		
Chloride Barium	Moderate		Moderate	Moderate	Cont Positive Action on O.
Acetate Ammonia Potash	Great-		Gt it		
Chloride Lead	Offtime		Gt it.		
Gallate Ammonia	Great-		Gt it	Barely Gt it.	
Iodide Sodium	Great		Quite Strong	Gt it Mainly	Inc Friction on a
Chlorate Soda	Great-		Fair		
Tartrate Magnesia	Strong		Gt it	Partially Gt it. -	
Phosphate Lime	Weak		Stain on Silver		
Acetate of Lime	Gt Strong		Quite Strong	Quite Strong	

Solution	600 ohm	20000 ohm	40000 ohm	Phenomenon
Acetate Soda.		Pretty Good	Very Faint -	Slips Strongly on O. (Proper Output Form of Formation for Low)
Q Quartz Potash Acetate Middle -	Fairly Strong	Just feel it.		
Quartz Potash Benzoic Acid	Strong.	Ex Strong.	Strong —	Slips Gt Strong on O
Quartz Potash Benzoic Acid	Great	Strong	Weak, as Strong	Slips on O.
Quartz Potash Nitric Tri-phosphate	Strong	Fair.	Just gt it -	Slip on O. Take out the Gum + the first Liquid Bij - But not On the Metrograph. Where Bubbles come Other Element Has more "Kick" is at play What is it.
Quartz Potash Gum Sassafras	Very Strong	Strong	Just gt it -	
Quartz Potash Gum Gamboge.	Weak	Fair		
Quartz Potash Gum Asafoetida	Strong	Fair -	Gt it.	
Quartz Potash Benzoic Soda -	Mod. Strong	Just gt it -		
Quartz Potash Gum Quaiacum	Big.	Gt it.		
Quartz Potash Gum Myrrh	Big.	Just gt it.		
Quartz Potash Oil Gum Cloves	Strong	Gt it.		
Quartz Potash Gum Tragacanth	Big	Just feel it -		
Quartz Potash Balsam Canada	Big.	Fair.	Feel it	Inc Fric Shifted
Quartz Potash Balsam Copaiba	Strong	Gt it on E.+S.		
Potassic Potash	Fair	Strong on E.		
Picric Acid	Gt Strong	Gt Strong	Just feel it -	
Quartz Potash Quinidine	Enormous —	Ex Strong	Ex Strong -	1st Class Rot Nitz

Resistance with polarization

1	5	20	40
880	780	621	580

Temperature ____ C.
Room ____ C

Polarization - Coff. P Electrodes

Condition darkness,

Sometimes Amally
— dry through — dim
with 1' off Bunsen.

	1	5	20	40
closing				
swing B	41	47	49	52
swing M	280	271	293	312
opening		88		
swing B	46	49	53	59
swing M	264	287	289	286

Chloride head.

Centimeter

	1	.5	2.0	.40
Res in ohms	820	781	450	308
Polarity 38 second	16/60	16/60	24/60	47/60
Record of Closing				
Record on Opening				
do				

Constant 1000 ohms, darkness

	1	.5	20	40
Polar.	16/60	16/60	11/60	16/60
Closing				
Opening				
do				

Light shining

	16/60	22/60	13/60	12/60
Closing				
Opening				
do				

Heat pressure 6 [illegible]

	13/60	21/60	13/60	13/60
Closing				
Opening				
do				

Heat 82

	16/60	24/60	18/60	16/60
do				

150.

	18/60	17/60	24/60	25/60
	40	45	50	45

150

16/60	21/60	45n/60	21/60

Strip 150 in darkness.

17/60 47	24/60	26/60	28/60

Strip, zu darkness.

24/60 C 26/80 O	27/60 C	27/60 O	16/60 C	20/60 O	21/60

Strip in Light

28/60 C	29/60	26/60	24/60

Strip 50 gram weight Platina on Aluminium

26/80 C	24/80 O	40/60 O	24/80 O	26/80 C	22/80 O	22/80 C	26/80 O

Oxygen

Hydrogen

27/80 O	40/80 O	22/80 O	28/80 O	22/80 O	34/80 O	34/80 O

Strip 50 gram weight Platina on Nickel,

Oxygen

Hydrogen.

Dissolved in 100 Cube Centimeters Rain Water at 45° C.

CHLORIDE of LEAD.

$PbCl_2$.

Table 1. Resistance with Polarisation

Polarisation et	1 Gramme		5 Grammes		20 Grammes		40 Grammes		Remarks
	821 ohms		462 ohms		521 ohms		380 ohms		40 grm in 1/4 of 100
	closing 21/60	opening 24/60	closing 22/60	opening 24/60	closing 21/60	opening 24/60	closing 22/60	opening 46/60	
closing	19		29		27		23		
opening	41		48		39		60		
opening	42		25		19		16		in magnetic field
closing	14		12		21		18		
			Constant ---- ohms.						
closing	19		49		16		25		
opening	21		18		16		19		free darkness
closing	24		29		31		32		
opening	34		35		41		42		[illegible]
clos	—		—		—		—		
open	—		—		—		— 1		Magnetic field in light

Resistance, polarized.
Swing of Needle, closing
Swing of Mirror do closing.
Record on chemical paper closing after fall
Record " " " opening.
Swing of Needle on opening
" " Mirror " "
ditto again.
ditto again.
mean.

ditto with light.
3 times.
mean.

ditto with heat.
3 times mean.

ditto with magnet.
3 times mean.

ditto with light + magnet
3 times mean

ditto with heat + magnet
3 times mean.

ditto with light heat + magnet.
3 times,

ditto in sand bath,
At to number second after dry
3 times mean.

H. ditto in nickel.
3 times mean.
ditto aluminum
3 times mean.

ditto Zinc
3 times mean.

ditto Tin
3 times mean
ditto Platina
3 times mean

ditto Silver 10 ⊕ 11
3 times mean
ditto Copper
3 times mean
ditto Lead
3 times

on C. ditto Aluminum
3 times mean.
ditto Nickel
3 times mean.
ditto Zinc
3 times mean
ditto Tin
3 times mean
ditto Platina
3 times mean
ditto Silver
3 times mean.
ditto Copper
3 times mean
ditto Lead
3 times mean
ditto with strip
3 times mean.
ditto with strip + light
3 times mean.

T. A. EDISON.

Page 229 - Treatise on Heat Thomas Box

Menlo Park, N. J., _____ 187

Temp. of the Neutral Body	Temp. of the air in contact with the body and of all surrounding objects	Difference of temp. of the body and of the surrounding objects	Ratio of heat lost at different temperatures	
			Radiation	Contact
490°	60°	430°	3'10	1'980
600	"	540	4'19	2'085
780	"	720	7'17	2'230
960 red heat visible	"	900	12'68	2'348
1140 "	"	1080	22'01	2'458
1320 Bull red	"	1260	42'70	2'540
1500 Cherry "	"	1440	80'67	2'620
1680 Cherry "	"	1620	154'5	2'693
1860 Clear red	"	1800	299'7	2'760
2220 Clear Orange	"	2160	1189'0	2'880
2580 White bright	"	2520	4604'0	2'985

Note For the lower temperatures see Tables 104 + 105

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Menlo Park, N. J., _____ 187

Conducting powder water assumed to be by following

Faraday Gmelin 312. Vol 1

Following substances non-conductors in solid state Become conductors when fused

Iodine
Caustic potash
oxide of antimony
Oxide of bismuth
protoxide lead
Iodides of
Potassium
Zinc
Lead
protoiodide Tin

protoiodide Mercury
Chlorides of
Potassium
Sodium
Barium
Strontium
Magnesium
Manganese
Lead
Zinc
Silver

Tetrachloride Antimony
protochloride Tin
Dichloride Copper
Fluoride potassium
Fluoride lead
Cyanide Potassium
Sulphocyanide Potassium
~~Carbonate potash~~
Potassium
Calcium phosphate, Chlorate
Nitrate silver
Manganese chloride
Hydrochloric
Soda ~~Carbonate~~
Carbonate
Borate
phosphate
Nitrate
Nitrate Barytes
Nitrate chlorine
Acid phosphate lime
Borate Zinc
Lead
Borate
phosphate
Sulphate
Nitrate
Phosphate Copper
Nitrate Copper
Sulphate Manganese
Nitrate Silver

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Faraday

Imperfect semi conductors.

~~Oxide~~.

Sulphuret Molybdenum

Tin pyrite.

Sulphuret Silver.

Fluoride lead.

Chalk.

Many minerals.

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Menlo Park, N. J., _____ 187

Faraday

Conducting compounds.

Guebhin 311. Vol 1

Thermo Battery simple pair.

good	moderately good
Sulphuret Bismuth	peroxide Manganese
Galena	peroxide Lead.
Scale oxide iron	Sulphur.
Protosulphuret Iron	Blende.
Iron pyrites	Tinstone
Arsenical pyrites	protosulphuret Tin
Copper glance	Magnetic iron ore
Artificial disulphuret Copper	Specular Iron
purple Copper	Wolfram.
	Suboxide Copper solidified of fusion
	Red oxide Mercury
	Cinnibar

R. W. Fox. Guebhin 310 Vol 1

Copper nickel	Dimmutary in power
purple Copper	Iron pyrites
pyrites	Arsenical pyrite
Copper glance	Galena
Conduct well.	Arsenic Cobalt
	peroxide Manganese
	Tourmaline
	Fahlerz

Conductivity of fixed Salts

Name	Melting point	Conductivity
Chloride lead $Pb\,Cl_2$	580° C	32 200
Nitrate Soda $Na\,NO_3$	314° "	11.475
Nitrate Silver $Ag\,NO_3$	"	8688
Chloride Sodium $Na\,Cl$	960 "	8660
Caustic Potash $K\,NO_3$	342 "	6500
Sulphate Soda $Na_2\,SO_4$	1280 "	3680
$Sr\,Cl_2$	910 "	2260
Carbonate Potash $K_2\,CO_3$	1150	2150
Chloride Zinc $Zn\,Cl_2$		86

Journal Chem Soc 996 (1874) Pogg Ann cl.iv 161. 196

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Conductivity of fused Salts.

Name	Melting point	Conductivity	
Chloride lead - $PbCl_2$	580°. C	91.880	32.200
Nitrate Soda, $NaNO_3$	314° C	52.450	11475
Nitrate Silver. $AgNO_3$	— C	28.090	8688
~~Caustic Potash KCl~~	~~866 C~~	~~57.700~~	~~4400~~
Chloride Sodium $NaCl$	960.	28.020	8660
Caustic Potash. KNO_3	342	23.340	6500
Sulphate Soda Na_2SO_4	1280	14.090	3680
$SrCl_2$	910	8.700	2260
Carbonate Potash K_2CO_3	1150	8.810	2150
Chloride Zinc $ZnCl_2$			86

Journal chem Soc. 996. (1874). Pogg. Ann. Cl. iv 161—196.

Results of M.M. Wiedemann & Franz's investigations as to conductivity of metals for electricity & heat. Extracted from Tyndall's "Heat as a means of Motion" page 224.

Name of Substances	Conductivity for Electricity	Conductivity for Heat
Silver	100	100
Copper	73	74
Gold	59	53
Brass	22	24
Tin	23	15
Iron	13	12
Lead	11	9
Platinum	10	8
German Silver	6	6
Bismuth	2	2

— A Richer & C Bardy —

Photogenic power of flame. —

Oxyhydrogen light — 1 —
Drummond " — 3 —
Zinc burning in Oxygen — 4 —
Magnesium lamp — 5 —
Current of Nitrogen dioxide in a flask containing
Carbon Sulphide — 6 —
Jet of Nitrogen dioxide on a crucel containing
Carbon Sulphide — 6 & 7 —
Jet of Oxygen on a crucel containing
Carbon Sulphide — 7 —
Jet of Oxygen on a crucel containing Sulphur — 8 —

In Telegraphs and physical laboratories it is usual to employ for recording currents by chemical decomposition upon prepared paper an iron point the paper being moistened with a solution of Ferrocyanide of Potassium, and I find that this salt is invariably ~~now~~ recommended in all ~~text~~ books referring to the subject. The results are ~~same~~ invariably unsatisfactory. I have found that no matter what ~~metal~~ oxidisable is employed for the recording point, the protoxide is invisible formed by electrolysis, and of course to obtain the best results the reagent for that oxide must be used which with an iron point is not the ferrocyanide but the Ferricyanide of Potassium. The best proportions is one ounce of the ~~[illegible]~~ Ferricyanide, one pound of ~~the~~ chloride of sodium and half pound of water

the Chloride of Sodium being used to increase the conductivity of the paper; if more a greater quantity of the ferricyanide of Potassium is used a prolongation (and if in great quantity) a weak continuous mark is made upon the paper due to the fact that the ferricyanide of Potassium is an oxidizing agent and acts and oxidizes the iron point after independent of the current = but if lower Currents be used this effect is not apparent, polarization of the point by Hydrogen takes place preventing it from oxidation = The paper used must be free from iron and animal size otherwise the ferricyanide of Potassium will be reduced to the ferro, Coloring the paper blue by combining with the iron of the paper which is invariable a high oxide, and at the same time reducing the quantity of the active reagent = This solution is very economical and sensitive for Telegraphic purposes, frequently but is unreliable for accurate work, inasmuch as it does not give a true record of the passage of the current, in fact no accurate record can be made unless the coloration is made dependant of the action of Hydrogen, a process which I will presently describe =

As a reagent for the ferric salts of iron the Sulphocyanide of Potassium is decidedly the best all others since I have endeavored to employ as a reagent for the oxide, to 100cc of Distilled water I add — grms of Chloride of Calcium + — Mls of Sulphocyanide of Potassium + — Mls of dilute Hydrochloric of iron, after no reaction takes place between the iron salt & the sulphocyanide if acting upon paper be mentioned in the solution and hand upon passed through the chemical recorder and the setting so commencing

~~The~~ oxygen will be evolved on a platinum point, the protoxide salt of iron will be raised to a higher state of oxidation & the sulphuric acid reagent will combine to form the ~~the~~ red sulphocyanide of iron, ~~but~~ this coloration is beautiful but of great delicacy. 2 Bunsen Cell giving needed more agile at 20 words per minute through ——— ohms.

When iron recording points are used they soon become rough and tear the paper ~~and~~ thus requiring them to be smoothed with a file every few minutes. Especially if the paper is quite moist and ~~the~~ is moved slowly forward, and on this account I have endeavoured to replace the iron point by some other metal still retaining the iron salt and the reagents but not very successfully owing to the tendency of the salt to decompose when exposed to the air. If Ferrocyanide of potassium be added to a solution of ~~Ferric~~ chloride of iron no reaction takes place if now the recording point is made of platinum or iron or nickel ~~to remove the oxide~~ of tin protoxide of tin will be formed and this being a powerful reducing agent will reduce the ferric ~~chloride~~ salt to a brown state ~~of~~ of oxidation & this will combine with the ferrocyanide to form Turnbull's blue. ~~The trouble with this system of photography arises in the special chemical reagents employed to light the ferric salt. The paper is turned blue when exposed to the light.~~

Table of deliciousness.
Tellurium. Rutherium. Iridium. Osmium. Platinum. Palladium. Rhodium. Ruthenium. Iron. Nickel. Cobalt. Manganese. Chromium etc. due to a Phosphuretted Hydrogen etc.

TAE

Try Chloride mercury = tin pen
may be colour ~~[illegible]~~ opal

Molybdenum pen. to zinc of bath
& sulphocyanide pot - delicate

Tellurium pen try. ~~[illegible]~~ Sulphite soda
or pirochloride tin. These percip
Tellurium to metallic state
also Carb Pot.

Selenium pen both to zinc & Copper
Hydrosulphuric A & Hydrochl A
also pirochl tin

Chl Barium. Sulphurous acid.
platina pen. Oxygen turns Sulphurous
to Sulphuric A & percip white.
use ordinary black paper

Sulphurous A. Sugar. platina pen (1887)
Coke – Extra Oxygen make ous. ie
when sugar is charred black. plenty
sugar

Phosphorus Water Silver pen
also by phosphate salts with silver pen

Iron pen. phosphorus acid. least
possible excess of Nitric acid, & longest action
— & Yellow white gelatinous
per cap may raise nuff to break clot
may be red when current strong

Binoxide or protoxide antimony, nitrate
Silver & Hydrate Pot or Soda.
platinum pen. to Carb. Black.

(also ~~peroxide~~ antimony pen ~~sodas~~. caustic
Soda. Nitrate Silver & ~~carb~~. 2 ine to pen
Try. Nitric A
" permanganate Pot
" Bichrom
" Chlorate Pot
good but not so good as Yellow)

Chloride of mercury is a test for prots of tin
delicate, if percip which is considerable be
white use colored paper.

Aurichlsod chlsod & little Nitric Ac to
increase delicacy.

Nickel Salts are discolored when come in
Contact with water.

Cobalt pen – Sulphide Amon percipi from neutral
Sals & Hydrosul a from Alkaline Sals The prots
as insol Black hydrated Cob., Chl Ammon
greatly assists,

See if Chl Sod or Am assists ferrid to detect
minute quantities of protosulphate iron,

Make print new sol.
sulphl. iron, ferric. salt & ~~oxalic~~ tin pen

Platinum pen. Antimony salts, oxide
Try = Teroxide best. Liberation of hydrogen
leaves Black of antimony on platina
pen. insol. Frisenius p 161. Try
both Positive & neg poles Zinc Blk Mt Tellurium
Teroxide antimony Nitric acid to convert
prato ox to a Nitrate. Silver pen
Blk percip (very dirty) by adding ammonia
one of oxides dissolves.

Try Bunsen battery with ter oxide
of antimony in place dil acid
also with bath Ter oxide a oxidizes
zinc rapidly.

Tin pen. chl pal or chl wat. & Concentd
sul sulphite ~~potash~~ Soda.

Cru Pat - bist

Common Salt gives Blk ink with zinc & pen
Tellurium pen - Gum

Hydrogen is Acid solution best
for lettuce per
Com Salt or
Caustic Pot best
Carb Pot good

Aniline treated with Sul. A. & oxidized with platinum pen gives Egyptian midnight black mark after a time =
prob sulphate of aniline, will answer

Binoxide tin

it is the
Chlorinary is that for prolochloride -
Black inky prep - (Em very
note refer & other record book

Copper pen
~~Platinum pen~~ - grape sugar ~~grape sugar~~ -
~~boiled~~ makes the proto to a
sub ox —

Bin oxides & Platinum pen =
get a soluble prato ox lead - platinum pen
& a manganese salt = ~~Electric~~ oxygen
~~lum~~ prato lead ~~to~~ Bin lead &
perap mang

Ferrocyanide Sod will do all ferro pot
will so will ferro sodium make or by
some

Cyanide Pot, Excess to protosul ion or
protochl non ~~lum at I~~ & Oxymuriline
lum it to a ferrid - iron pen -

Colored paper Chl barium - Sulphuric acid
platinum pen - ~~Electric~~ atom ox
added to fresh sulphuric acid make
it a Sul a & White perap

Platinum pen Molybdic A or Molybdat
dilute Hydrochloric Sol. prob not necy (yes 95.50.) add
strong Sol Sulpho Cyanid Kali
Liberation of Hydrogen gives Carmine
Color (very very sen) Positive &
Negative poles. battery =

Tungstate Salts = tin pen — mixture
acidified by Hydrochloric ~~or phosphoric~~
prolo tin gives blue or yellow Coloun

Tellurium Salts - Tin pen. Blk works.

Prolochloride iron. ferro Iron pen.
forms Bin ox. also sulphocyKali —
to make proloch boil Sulphate Soda
with sesqui Chl till Colorless,

Pressure 212 -5

Sol Soda Lead pen — Hydrosulphuric A

Iron pen Chlorid Sul acid.
Blk precip - f 262

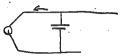
Get some Morphia -
neutral sesquichl impart dark Blue
Col (Sen)

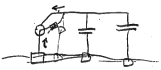
Presen: 397 398 - good
get Aurum

If strychnine is oxydized it assume
a magnif Blue violet Color, which
gets dirty after time - platina pen.
- 401

Brucine. concentrated Nitric A also
diluted with water produces the change
it from intense red to intense Violet.
Sen

Binoxide of Soda or Potash – turn green
Turmeric Dahlia or Litmus go green
Binoxide is not alkaline but generates
the reducer. Bin to generate the
Soda becomes alkaline & leaves mark





Experiments,

1

Ferro- Chl potash- possibly salt,
Chlorate sesquioxidizes the Electro-protoxide and
Ferro strikes a Prussian Blue = also try
other oxidizers "Chromate Potash - Nitric &
Permanganate Pot=.

H2O Guiac Caustic potash - Tartaric acid
probly Chl Amon or Chl Cal. - Tartaric a
to prevent Pot redissolving Guiac Mark

Chlorine or chloride sesquioxidizes a protoxide or Chl
hence Chl Sod. in Chlorine Water, and
Ferrocyanide Pot=

Chl Pot. Hydrochloric a ferro Chl Sod - turn to a ferrid

Put hard rubber shavings in a stream of
hydrogen to desulphurize it by making
Sulphuretted hydrogen try Kerite, Bradly,
Wholey

Sulphide Amon precips proto to black hydrated protosul Iron, which gradually oxidizes, in air hence add last proto-chl tin, Chl Amon greatly assists, poly chl sod to, but that may be alkaline.

Try. protosulphate iron, potash or ammonia & platinum pen, extra oxygen makes proto a higher oxide & potash gives a red brown color

Molybdenum pen. oxidizing agt to give a sesquiox of Molybdenum & then sulpho cyanide of Pot gives red Color

Try Chlorine Water proto & sulpho cyanide Pot Chlorine W Converts proto of a sesquichl iron,

Uranium pen Ferrokali very sens test red brown precip,
Sulphuret Ammon del test, Chl Am assists crystal

Vanadium: ferro tart sulphat & nur

Thallium: Hydrosulphuric ac for alkline Sol.
Hydrosulpht Amm from Neutral Solo -
Chromate Pat gives yellow - Bichrom deep orange
precips insol wat + acids. Iodpat very
Sen. Reagent gives Iod Thal. which insol
in either water or excess reagent - try

Palladium pen Test are Hydrosulphuric ac. & do pht
ammonia: Black very insoluable Iod pat
Blk protoiodide pal. (Sen)

Ruthenium - - Potash = Blk. ox - insol alkalis -
H2S sulphuret Am blk ox sol in excess - Sulphocyanide
red gets violet (Sen)

Iridium Chloride tin pen Salt & Chlorwater so
as to have mixture of Proto + Bichl. tin,
(Very Sen). try tannic ac in various ways.

Wormwood
Gum Arabic
Vinegar
Aconite Leaves
Aconite Root
Land
Star Grass
Garlic
Aloes
Marshmallow flowers
" Leaves
" Root
Ammoniac Gum
Bitter Almonds
Sweet Almonds
Starch
Dill Seed
Angelica
Garden Angelica
Angustura Bark
Anise
Chamomile
Dogs Bane
Indian Hemp
False Sarsparilla
Angelica Tree bark
Horse-radish
Leopards-bane
Dragon Root
Canada Snake root
Flesh-Colored Asclepias
Common Silkweed
Butterfly weed
Assafetida
Orange Peel
Oatmeal
Agedarach
Balsam of Peru

Balsam of Tolu
Belladonna
Benzoin
Buchu
Sweet flag
X Camphor
Canella
Canna Starch
Spanish flies
Potato flies
Cayenne Pepper
Cardamon
Carrot Seed
Garden Carrot root
Dyers Saffron
Caraway
Cloves
Cascarilla
Purgng Cassia
American Senna
Chinquapin
Cantor
Catnip
X Catechu
Com European Centaury
White wax
Yellow wax
X Spermaceti
Iceland Moss
Wormseed
Pipsissewa
Chinetta
Irish Moss

Black Snake root
Peruvian Bark
Cinnamon
Cocculus Indicus
X Cochineal
Colchicum Seed
Coloquintida
Columbo
Hemlock Leaves
" Seed
Contrayerva
Wild Potato
Copaiba
Gold Thread
Coriander
Round Leaved Dogwood
+ Dogwood
Swamp Dogwood
Mayweed
Creasote
X Saffron
Cubebs
X Tumeric
Quinceseed
Cumin Seed
Larkspur
Foxglove
Persimmon
Skunk Cabbage
Bittersweet
Elaterium
Elemi

2

Erg ot
Canada Plantain
Philadelphia "
Button Snakeroot
Erythronium
Thoroughwort
Large flowering Sponge
Ipecacuanha "
Euphorbium
Extract of Hemp.
Liquorice
+ Wheat flour
Figs.
Male Fern
Fennel Seed
American Columbo
Galbanum
Galls
X Gamboge
Partridge Berry
Gentian
Blue Gentian
Cranesbill
Water Avens
Gillenia
Liquorice Root
Pomegranate Rind.
Bark of pomegranate Root.
Guaracum Wood

X Guaiac
X Logwood
Pennyroyal
Broadwort
Black Hellbore
Indian Sarsaparilla
Liverwort
Mayflowerwort
Alum Root
Lee Barley
Hops
Henbane Leaves
" Seed
Ginger
Elecampane
Ipecacuanha
Florentine Orris
Blue Flag
Jalap
Ballocnut
Juniper
Red Cedar
Kino
Rhatany
X Lithuus
Lettuce
Lactucarium

Acrid Lettuce
Burdock
Cherry Laurel
Bay Berries
Lavender
Lemons
Lemon Peel
Flax Seed
Purging Flax
Tulip Tree bark
Lobelia
Lupulin
Bugleweed
Magnolia
Common Mallow
Manna
Arrow Root
Horehound
X Mastich
Matico
German Chamomile
Honey
Balm
Peppermint

Spearmint
Backtrac
Megracon
Horsemint
Mulberry Juice
Musk
Cowhage
Nutmeg
Concrete Oil Nutmeg
Mace
X Myrrh
Nux Vomica
Oil Almonds
Oil Bitter Almonds
Oil Bergamot
Neats foot Oil
Cajeput Oil
Oil Cinnamon
Oil Lemons
Fl. acid Oil
Cod liver Oil
Oil Nutmeg
Olive Oil
Castor Oil
Oil Roses
Bonne Oil
X Oil Turpentine

Croton Oil
Opium
Origanum
Gengseng
Poppy heads
Pareira Brava
Petroleum - Crude
Parsley Root
Poke berries
" Root
Pimento
Black pepper
Long "
Pitch
Burgundy Pitch
Canada Pitch
Tar
May Apple
Bitter Polygala
Black Alder
Prunes
Wild Cherry bark
European Pennyroyal
Pellitory
Quassia
White Oak bark
Black " "

Crowfoot
X Resin
Buckthorn Berries
" Juice
Phubal
Red Poppy
Sumach
Dog Rose
Hundred Leaved Rose
Red Roses
Rosemary
X Madder
Blackberry Root
Blunt Leaved Dock
Rue
Cevadilla
Ana Centaury
Savine
Malassi
Brown Sugar
Maple Sugar
Sugar of Milk
Sagapenum
Sago
Willow

X Sage
Elder flowers
Bloodroot
Red Saunders
Soft Soap
Sarsaparilla
Sassafras Pith
Sassafras Bark of Root
Scammony
Squill
Seneka
Senna
Virginia Snakeroot
Berne Oil
Suet.
~~Sicimuta~~
Simarouba
Mustard
Golden Rod
Pink root
Haidback
Slancoacna
Marsh Rosemary
Queens Root
Stramonium Seed

Storax
Amber
X Tobacco
Tamarinds
Tansey
Tapioca
Dandelion
Venice Turpentine
Chian Turpentine
Tormentil
Poison Oak
Tragacanth
Fever Root
Elm Bark
Slippery Elm Bark
Raisins
Uva Ursi
Valerian
White Hellebore
Black Hellebore
Violet
Winters Bark
Yellow Root
Prickly Ash

Ginger
Milfoil
Baneberry
Baobab
Maidenhair
Horsechestnut
Touchwood. Spunk
Ann Agave
Common Agrimony
Ground Pine
Ladies Mantle
Water Plantain
X Alkanet
Hedge Garlic
Com European Alder
Ambergris
Cashew-Nut
Scarlet Pimpernel
Bugloss
Sorrel Tree
Meadow Anemone
Gum Anime
X Annatto
Chervil
Com Toad flax
Columbine
Betel Nut
Prickly Poppy

Asarabacca
Redbend, Bloodweed
Asparagus
Female Fern
Balsam Gilead
White Indigo
Barbadoes nuts
Bassora Gum
Bdellium – Gum
Bean of St Ignatius
Beberin Bark
Bedeguar, fungus Rosarum
Barberry
Wood Betony
Com European Birch
Bistort
Bitter Ash
Borage
X Bragellwood
White Bryony
Cabbage tree Bark
Cahinca
Marygold
x Cam Wood

Canary Seed
Caoutchouc
Caperbush
Gum Caranna
Cuckoo flower
Catalpa. Cordifolia.
N Jersey Tea – Red root
Cedron
Climbing Staff Tree
Blessed Thistle
Celandine
Chicory
Water Hemlock
Com Scurvey Grass
Cocoa, Chocolate nuts
Cocoanut oil
Berberin ~~ts~~ Tree
x Coffee
Horseweed, Richweed,
Bladder Senna
Sweet fern
Lilly of the Valley
Solomons Seal
Copal
Clove Bark
Beaked Hazel

Navel'wort, Pennywort
Watermellon Seeds
Pulilawan
Avin Dittany
Artichoke
Hounds Tongue
Ladies Slipper
Clove Pink
Eppels Animal Oil
Oil
Leather Wood
X Dragons Blood
Trailing Arbutus
Coca
Burning Bush, Spindletree.
Eyebright
Con Europ Ash
Sea wrack - Bladder Wrack
Tumitom
X Quotie
Galanga
Goats Rue
Cleavers, Goose Grass
Ladies Yellow Bedstraw

Yellow Jasmine
Dyers Broom, or Weed
Herb Robert
Wild Senna of Europe
X Glue
Cudweed
Hedge Hyssop
Guaco
Guano
X Gun Cotton
Gulla Pecha
Chaulmoogra
Witch Hazel
Ivy
False Sunflower Snegweed
Bears Foot
False Unicorn Plant
Hermodactylo
Assacou
Common Hydrangea. Root Bark
Yellow Root, Orange Root
St Johns Wort
Hyracium
Hyssop
Holly
Florida Anise Tree

Touch-me-not.
Masterwort
Indian Yellow
X Indigo
Woad, Pastel
Twine Leaf
Mountain Laurel
Ladanum
Lac
Marsh Tea
Leek
Nuttall
Gray feather, Button Snakeroot
Lovage
Common White Lilly
Sweet Gum
Gromwell
Honeysuckle
Lycopodium Clavatum, Clubmoss
Loosestrife, purple willow herb
Malambo or Matias bark
Mandrake
Indian Cucumber

Melilot
Menispermum Canadense
Lee Plant
Mesquite Gum
Balsam Apple, Balsamina
Monesia
Moxa
Mushrooms
Myrobalans
Ambrical Musk
Daffodil
Spikenard
Watercress
Nutmeg flower
Sweet scented Water Lilly
Basil
Fine leaved water hemlock
Tree Primrose
Oil of Anda
" of Ben
" " Cade
" " Euphorbia
" " Jasmine
X Olibanum
Onion
Opopanax

Beech drops, Cancer root
~~Kings Yellow~~
Rice
Wood Sorrell
Ox Gall
Peony
Palm Oil
Wall Pellitory
Prairie Dock
Paullinia, Guarana
Peach Tansy
Pickwim Beans
Small Burnet Saxifrage,
Cynoknema Pubens, Michaux
Jamaica Dogwood
Plantain
Leadwort
Common Polypody
Hair Cap. Moss. Robins Rye
Poplar
Garden Purslane
Cinquefoil
Lions foot
Selfheal Heal All

Lungwort
x Pumice Stone
Acetous
Weld
Yellow flowered Rhododendron
Riga Balsam
Rittera Tinctoria, Rameala, Roero
Salep
x Sandarach
Sanicle
Sandal Wood
Sarcocolla
Sarracenia, Sidesaddle plant
Sassafras
Sassy Bark
Summer Savory
Saxlatongue
Figwort.
Scullcap
Rye
Small Houseleek
Common Houseleek
" Groundsel
Catchfly, Wild Pink
Hedge Mustard

Copal Experiment

Sparingly Soluble in Chloroform & oil Marbane
Insoluble in Kerosene
" " Benzen
" " Kerosene & Ether
" " Turpentine
" " Alcohol
" " Ammonia
" " Acetone

Sparingly Soluble in Chloroform & Marbane
Take fine powered Copal in a dish
Place in boiling water into it Strikes
very Soluble in Ether Marbane and Hot Alcohol
put test tube in ~~bad~~ Hot water and let
mass boil slow
and let it stand a long time in sun
oily looking Solution
Caoutchouc mixes with soluble Copal
when heated to a very High heat it
becomes volcanized but when Heated
more it gets to a hard substance
and I think would be very good for
our purpose it would have to be
pressed Hot
Mixia Cobalt Alcohol & a little Camphor
turns it in to a tough substance

Copal Experiment

Copal Soluble in Oil Rosemary.

" " Ether Ammonia & Hot Alcohol

insoluble Creosote & Ether

" " Hot Alcohol

" " Turpentine

" " Oil Marbane

" Sulpuric acid

Strongly Soluble in Camphor & Ether

insoluble oil almonds

" " Ether

" " Alcohol

" " Turpentine

" " Ammonia

" " Acetone

" Acetone

" in Alcohol Vapor

" " Ether "

Copal first melted insoluble in Everything now like to try

Ether & Hot Alcohol Strongly Soluble

Copal in oil rosemary

Gutta percha in oil Turpentine

Good combines ~~a~~ when Heated

and makes a tough substance

Copal oil rosemary

Melted rubber very good

Soluble Copal & Grape sugar no good

" " Jalapin no good

Copal Experiment—

Alcohol Chloral Hydrate dont think it
acid a little camphor still no good
Alcohol Hyposulphite Soda — Camphor no good
" Acetic acid no good
with camphor do
" " Caffeine do Camphor do
" " Carbolic acid do "
" " Caustic Potass Slightly soluble
Naptha ——— no good
Alcohol Carbazotic " "
" Nitrate of Ammonia " "
" Nitrate of Barium " "
Chlorine " "
Sulphate Copper " "
Alcohol & Ammonia Strongly soluble
" Camphor " "
" Cyanuret Potassium no good
" Carbonate Ammonia " "
" Cobalt Nitric " "
" Carbonate Baryta " "
" Sulfate Cadmium " "
" Nitrate Lime " "

Arsenide of Dose Kills in 6 minutes
Elaterium no good
Morphine Mortis no good
Picric Acid Nature no good
Strychnia no good
Iodine by Hydrogen no good
Acetate of Lead no good
Sulphate Quinine not much good
Sulphate of Quinidine no good
Magnesii Bromide no good
Nitrate of Zinc no good
Berberin Pure no good
Acetate of Silver no good
Manganate of Soda no good
Cinnabar no good
Iodides of Lime no good
Protochloride of Mercury they dont take it worth a cent
Carbonate of Barytes no good
Ornament no good
Chromate of Lead no good
~~Potas~~ Natrum formicicum no good
Morphine Pure no good
Sulph Cyanide Potass Kills in some time
Permt Manganese no good
Ammon Citric Kills in 11 min
Sub-sulph of Iron no good
Cupri Cyan no good
Mang on hypophos no good

Molybdate of Soda no good
Acetate Copper cryst no good
Tungstate Amonia no good
Alcannin no good
Protochloride of tin no good
~~Iron~~ Iron Oxalate no good
Chamaeleon min no good
Phosphate of Soda no good
Ammon citric Kills in five min
Tartrate of ammonia no good
Tannate of Zinc no good
Antimoniate Potash pure no good
Hydrobromate Ammonia not much good
Baptisia no good
Microcosmic Salt no good
Citrate of Soda no good
Sulphio Carbonate of Soda no good
Tungstic Acid no good
Sulphuret Barium no good
Iron Arseniate no good
Saydelin no good
Nitrate of Lime no good
Protoxide Antimony no good
Sulphate Amonia no good
Tannate of Soda by again
Phosphate Amonia Kills in 5 min
Caustic of Baryta Kills in 5 min
Nitrate of Silver Kills in 12 min
Santalina no good
Chloride Alumina no good

Copal Soluble

Ether oil Marbaine Hot A

oil Rosemary

~~Menstruum~~ Ether ~~Camphor~~ Ammonia

and Alcohol

Creasote and Ether no good.

" Hot Alcohol no good

" Turpentine no

" Oil Marbaine no g

Sulphuric no good

Camphor & Ether a little soluble

oil almonds Cod liver oil no good

Alcohol Vapor no good

first melted insoluble in Every th

Crucal

Ether and Hot Alcohol Sparingly

Soluble

insoluble in Acetone

Copal Soluble in oil Rosemary

Gutta percha in oil Turpentine

Commences when Heated and

makes tough substance

Copal & oil Rosemary

melted rubber very good

[illegible] solution in chloroform
& Morphine
Any Powdered Coal plaster in dish with
water or boiling water
[illegible] place the [illegible] in hot water and boil
slow and let it stand for a long time
the [illegible] oily looking solution

Dry Extractment

Recovery

Dog Experiment

Chloride of Lime no ~~thing~~ Kills in five minutes

Arsenious Acid the Lithe the Horse

Cyanuret of Potassium Kills in one minute

Lactic Acid no good

Phosphate of Soda no good

Sulphate of Potash no good

Nitrate Strontia no good

Kali Valerianicum no good

Creasote no good

Nitrate Cobalt no good

Zinc Sulphate no good

Kaoline no good.

Nitrite, Potassa no good

Benzoil sure death

Acetic Acid ditto

Yellow Prussiate Potash makes them sick

Tannin no good

Phosphate Lime no good

Urea acid no good

Alum no good

Chlorate of Lithium no good

Gum Arabic no good

Bon Black no good

Bisulphite Soda no good

Red Sulphuret Antimony no good

Bebeerin muriate no good

Protoxide Nickel no good

Chloride Potassium no good

Palmitinic acid no good

Hyperchloride of Lime no good

Ferri Ammon citras no good

Chromate of Potassa no good

Cyanide of Silver no good

Valerianate of Soda kills in two minutes

Quinine Muriate kills in 4 minutes

Sulphuret of Tin no good

Iodide of Antimon kills in 2 minutes

Quinidine no good

Quinine citrate ~~kills in 5 minutes~~ no good

Sulphate Cobalt kill in 7 minutes

Valerian Ammonia kills in one minute

Bromide of Iodium no good kills in 10 min

Tranic acid no good kills in 10 min

Arsenate of Quinine no good

Valerianate Magnesia kills in 2 min

Quinine Tannate no good

Picric acid kills in 10 min

Sulphate of Nickel no good

Molybdate Ammonia kills in 4 min

Sulphate of Lime no good
Acetate of Baryta no good
Bisulphuret of Tin no good
Tartrate Potash no good
Borate of Copper no good
Oxalate of Soda no good
Ammon Boracic no good
Sulphate of Morphia no good
Nitrate of Lead no good
Mercuropermin no good
Ferrocyanide of Soda no good
Camphoric acid no good
Chinin Valerianate no good
Zinc Cyanur no good
Aloin no good
Ammon gallic no good

Carbonate of Strontia no good
Carbon of Lime no good
Thymol no good
Sulphate of Soda no good
Sulph. Manganese no good
~~Carbonate of Iron~~
Carbonate of Manganese no good
Citrate Magnesia no good
Nitrate of Magnesia no good
Acetate of Zinc no good
Oxalate Strontia no good
Sulphate of Lime nil
Bimoplate Potash Kills in 5 minutes
Oxalate Potash ~~Kills in 5 minutes~~
Caseine no good

Black Sulphuret Antimony no good
Sodium Permangan no good
Citrate of Potash no good
Per Oxide of Lead no good
Bromide of Potassium no good
Sodium Sulfovinate no good
Acetate of Lime no good
Magnesia Tartaric no good
Ammonia no good
Lactate of Zinc no good
Bisulphate Potash Kills in 8 minutes
Chlorate Soda no good
Crocus Antimon no good
Nitrate Magnesia no good
Chlorate Potash no good
Bisulphate of Soda Kills in 4 minutes

Sulphomolybdiate, K Na or other
Tin pen –, try Molys also Pb pen

Monochromate Pot. Tin pen little
free acid,

Sat sol O2 permanent, Hydrosulphate soda, Tin
pen

Acetate Pb, little HCl. HO_2 – P pen

" Hypo soda or sulphate K,

Sulphocyanide Kr acetate Pb –

Bromide K Pb acetate,

Sulphocarbonate Calcium Lead pen

Prussiate ch Pb in Hypo Na.

Proto lead (Litharge) dissolve hot
K leaves yellow flood, P pen K

Litharge dissolve hot lime water P pen N

Bibasic Sulphocarbonate Na Pb pen

Grams Sugar	Marks Potato
Silver x Zinc Nil	Iron x [illegible] Nil
[illegible] " "	" Zinc allowing 2½ gms down
" Copper "	Copper " " " 3
Carbon x Iron "	Platinum x Aluminum Nil
Zinc x Aluminum "	" Zinc "
Copper x Carbon "	Carbon x Platinum "
Platinum " "	" Copper "
Iron x Platinum "	Zinc x Aluminum "
Zinc x " "	Iron x [illegible] "
Copper " "	" Zinc " Zinc "
Aluminum " "	" Copper [illegible] "
Copper x Platinum	" " Platinum "
Zinc x Silver	" Lead x Zinc on Aluminum 1½ days gms down allowing
Iron x Zinc	" Silver x " Nil
Iron x Iron	Iron x Platinum "

Bisulphate Potash on closing
Bdeg Lead & Zinc

Silver & Zinc Mix
Copper & Lead "
Carbon & Iron Leading
Poly Iron
Zinc & Tin "
Aluminum & Zinc Mix
Carbon & Platinum
Zinc & " on closing 2 day
Poly Iron
Carbon & Copper 5 on closing
Poly Iron
Aluminum & Platinum Mill
Copper & Platinum "
Copper & Zinc 15 on closing
gone down to 9½ without Plating
Iron & Zinc Mill
" & Iron "
Platinum " "

Hypothetical Bromine Platinum & Zinc
Mill
Iodine ~~Zinc~~ with Platinum & Zinc
Mill
" Iron & Platinum "
Zinc & Aluminum Mill
Copper & Carbon on closing 2 deg
Copper & Platinum "
Carbon & Platinum Mill
Platinum & Aluminum "
Lead & Copper "
Copper & Zinc on closing 1 deg
in one minute [illegible]
Iron & Copper Mill
Iron & Carbon "
Zinc & Lead on closing 2½ in 4 minutes down
to 1 deg

Phosphate of Potash Platina & Zinc mix

Platina x Carbon

" x Iron

" Aluminum

Zinc "

Copper x Carbon

" Lead

Zinc " all closing 2½ gave right down

Iron x Carbon Mix

Tin x Zinc "

Silver x Zinc "

Zinc & copper closing at 3 days gave right down

Copper x Iron mix

Iron x Iron "

Tin & Zinc - with Grape sugar no fetor in H X

Silver & Zinc with Acetate Strychnine no fetor in H

Platinum, & Zinc, Hyposulphate Barium no fetor in H X

Platinum Zinc, Iodide Zinc. no fetor in H

- Pepsin -

Dry Sol[illegible] of Ferrocyanide Pot

Phosphi[illegible], platinum & Zinc X

Ferrocyanide Pot & Sod = Platinum & Zinc = no fetor in O X H2O - X

XX Bi-phosphate Potash & Aluminum Zinc - also Aluminum X

platinum - & Aluminum to chemistry

Phosphate Soda - Platinum & Tin = also X

Calm & Tin

Bicarb Soda Nickel & platinum nickel with metals

Bromide Potassium - all the [illegible] Cal X

Bromide Ammonium X

Platinum + Iron = Chromic acid = X

Platinum Copper - Carb Magnesia X

Lead, Nauns Metals X

Nitrate Strontia

~~Hydrocyanide Soda~~

Bromide Iodine

Arsenide Iodine + 2 mo + 1 silver

Acetate Aluminum - Use aluminum
Electrode with [illegible] metal

Hypophosphite Manganese -

Hypophosphate Ammonia

Chlorate etc

Iodide Barium

Anchorate Potash

Chemical Phenomenon

a strong solution of Ferrocyanide of potassium crystalized in a closed space in a bottle with a porous piece of paper ~~porous~~ from the liquid to the air by the side of the cork shows crystal nearly white cream colored & have the appearance of ~~white~~ cream colored silk

---

a 1 gram in 100 cc of phosphate in ammonia water deposits a greenish powder at the bottom of the bottle & greenish scintillated crystalization takes place on the inside of the bottle & within the liq

a 5 grain of Vincen Tinpulum &
1 grain Caustic Potash, with a
strip of paper; 100 cc H2O
will deposit beautiful
crystals on a piece of paper
inserted in liquid passing
out through the side of the
cell & bottle after 2 months.
These crystals when rubbed in
the fingers have a gummy
feeling —

Iodide Sodium — 20 grs
in 100 cc H2O, with paper strip
in small cell. Strip on
1 becomes colored near
end with free iodine & paper
swells, several times its own
size.

and has deposited crystals
with slip of paper — Mary

Gum Guaac 20 grms 1000cc aqua
ammonia after 2 or 3 months
fumed solution black & slip of
paper immersed is intensely black
how would this damage a dye

1 grm Sulphate Iron 100cc H2O 2 months or
3 in bottle = all turned yellow
& fumed white yellow & cum is
in bottle it reflects, prismatic
colors —

20 Gramme Solution of Sulphate Magnesia
apparently [illegible] paper after 20 months

Paper in Stannate of Soda
solution seems to be very tough &
hard —

neat test for zinc in metallic mercury, place a globule of mercury in a flat dish, pour several drops of phospho-wolframic acid upon it, if the smallest quantity of zinc be present the surface of the mercury will be colored blue.

3

Laboratory Notes.

16 Neat test for zinc in metallic mercury. place a globule of mercury in a flat dish, pour several drops of dilute solution of phospho-wolframic acid upon it, if the smallest trace of zinc be present the surface of the mercury will be colored blue.

17 A strong syrupy solution of Arsenic Acid dissolves paper immediately, and in large quantities if slightly heated.

18 A syrupy solution of Acetate of Manganese cause paper to swell up several times its original size.

19 It is stated in Gmelin & other works that paper is insoluable in the volitile oils. I have found that if strips of bibulus paper be immersed in oil of white thyme and also in oil of juniper wood and exposed to the light that in two weeks the strips fall to the bottom of the bottles in pieces, and when collected can be

Laboratory note.

If upon a flat plate there is poured a saturated solution of phosphorus about 1/8 thick & a Bell glass put over this with perhaps a small chance for air to peak in in several hours the Bisulphide will become evaporate, over the plate should be placed a square plate gauze

after all Bisulph gone raising up the jar pretty well when phos dry start rings or 1/2 moons, which are formed by a ring which start out opite one going to right also to left clear round plate giving appearance of as if a wheel was revolving

A strong syrupy solution of Arsenic Acid dissolves paper immediately and in large quantities, if slightly heated.

~~Acetate~~ A syrupy solution of acetate of Manganese, causes paper to swell up several times its original size, paper is also soluble therein to a considerable extent. It is stated in Mulin and other works that paper is insoluble in the volatile oils. I have found that if strips of bottles paper be immersed in Oil of white Thyme, and also in oil of Juniper wood exposed to the light, that in two weeks, the strips fall to the bottom of the bottles in pieces and when collected can be kneaded in the fingers and has the appearance of a semi transparent wax, This solvent power of the white thyme is greatest, The other volatile oils have no such effect.

Marks.

Prob. Uranum (U Bon) yields with formate of KO green precip which dissolves in excess of soda salt.

Aqueous sol of a formate yield dark red precipitate with Iron Salts.

Manganidecyanide of KO. yields brown precip with Lead Salt,

Manganidecyanide of KO yields rose ~~red~~ colour precip with zinc Salts,

Prob. Uranum (U Bon) Cyanide KO black precip

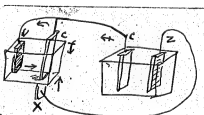
see 466. Vol 1 Organic.

Mix Linseed oil with chalk
spread chalk out to dry
for several days this allows
Linseed oil oxidize, then dissolve
Chalk in HCl — & see what get
Extract residue with Ether — then
leave white mass [illegible]

Boil Linseed for long time with
Dilute Nitric a until to thick x
[illegible] stick to finger

Heat it with $\frac{1}{4}$ its weight phosph
[illegible] Leather

1 Lin oil · 2 Com Nit a 4 bulk [illegible]
heated from Tough Elastic Resin

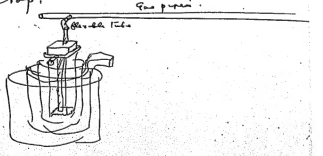


Depolarization by a second battery placing the Carbon X in a Current "bridge"

Coat the 1½ Carbon with white of an Egg very thickly, then put it in flame of a Bunsen burner and Carbonize the albumen. This will leave finely divided Carbon on the Cke and tend to depolarize it from Hydrogen

B.

Place a 1½ Carbon ~~Cell~~ in a porous cell and pack it with very finely divided pumice stone. Then put it in ~~Cutting a pour~~ just enough NO_3 to moisten the top.



Tube through the Carbon which is connected to a gas pipe by a flexible tube, air is forced through the pipe and the air passing up from the bottom of the Carbon takes the hydrogen with it and depolarizes. Bubbles of oxygen in the HO_3 surround the cell may be seen below the surface

Good

Teroxide Antimony, Chl Sod. no acid,
platina pen. to zinc of battery, also
try antimony - Hydrogen reduced
Antimony to metallic state,
Bzn. Protoxide of antimony ought to
be best. as $Sb_2O_3 \times Sb_2H_3O$.
black powder, very delicate,

Chl Sodium must not be used with
and this Antimony not good
Arsenate of soda. platina pen arsenic acid
to zinc of battery.

Copper pen. ~~so~~ grape sugar - ought zinc of battery
to give red suboxide

Copper pen to zinc & coke.
Arsenious acid, -

Platina Pen. associated with zinc pen
also zinc pen alone. to zinc of battery
Arsenious acid, black mark

①

Flowers sulphur black. prodosulphat
nom. platina pen. Zinc of Battery.

also. Hyposulphite Soda. Prodosul Fe
platina pen to Zinc of Battery.

75 pts dry Nit ammonia
25 parts dry Hydrochlorate
of ammonia. would 2 or 3 times
bulk sand when heated
fuses Nitrogen Chlorin
+ H_2O given off =